

F8426 Efficacy on Ground Ivy and Canada Thistle in Cool-Season Turfgrass

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Background/Objective: To determine the efficacy of F8426 on ground ivy and Canada thistle when used alone or in combination with other post-emergence herbicides.

Site I Information (Ground Ivy Control)

Location:	William H. Daniel Research and Diagnostic Center, W. Lafayette, IN.
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Soil Organic Matter (%):	5.8
Turfgrass Species:	Kentucky bluegrass
Turf Condition:	Good
Turf Management: Mowing Height cm (in):	6.35 (2.5)
Fertilization:	1 lb N/M/YR
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	Ground Ivy
Growth Stage:	Actively growing

Site II Information (Canada Thistle Control)

Location:	William H. Daniel Research and Diagnostic Center, W. Lafayette, IN.
Soil Type:	Starks-Fincastle silt loam
Soil pH:	6.7
Soil Organic Matter (%):	4.8
Turfgrass Species:	None (Fallow)
Turf Condition:	NA
Turf Management: Mowing Height cm (in):	Plants under 10.2 (4)
Fertilization:	None
Irrigation:	None
Testing on Site Previous Year:	None
Target Pest:	Canada Thistle
Growth Stage:	Actively growing

Application Information

Application Date:	Oct. 6, 2002
Application Time:	7:30 AM
Air Temperature C⁰(F⁰):	16 (60.8)
Relative Humidity(%):	58
Wind Speed m s⁻¹ (mph):	0.5-2.2 (1-5)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	16.7 (62)
Soil Moisture:	Mod Wet
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	814 (2)

Spray Pressure:	35psi
Spray Nozzle:	8002
Spray Equipment:	CO ₂ backpack
Irrigation After Application:	None
Experimental Design:	Randomized complete block
Replications:	3
Plot Size m (ft):	1.5 X 1.5 (5 X 5)

Results:

Fall 2002

All treatments caused significant injury to ground ivy within 7 DAT (Table 1). The treatments causing the fastest injury were F8426 (Carfentrazone) either alone or in combination with the other products. F8426 by itself had little effect on cover of ground ivy except at the highest rate of 0.05 oz/1000 ft². The addition of F8426 quickened control (rated as % cover) with all of the products and did not decrease control rated 21 DAT (Oct 27). In terms of reducing weed cover by 21 DAT, the most effective treatments were F8426 at 0.05 oz/M, F8426+Eliminate, and F8426+Turflon Ester. Fall data was last recorded on this study on October 27, weather turned and stayed cold.

The addition of F8426 (Carfentrazone) quickened thistle damage with all of the products except with Trimec Classic (Table 2). F8426 by itself had little effect on cover of thistle except at the highest rate of 0.05 oz/1000 ft². Tank-mixing with F8426 only improved control with Chaser when rated 21 DAT. F8426 had no effect on thistle control when tank mixed with Trimec Classic and Eliminate, but actually reduced control when mixed with Turflon Ester.

Spring 2003

F8426 by itself had no effect on control of ground ivy, Canada thistle or dandelion when rated in spring 2003 (Table 3). Furthermore, adding F8426 to Trimec Classic, Eliminate, Chaser 2 Amine, or Turflon Ester did not increase long-term control by these products. More importantly, F8426 did not decrease control by these products. Therefore the addition of F8426 (Carfentrazone) has tremendous potential for professional lawn care to provide quick burndown of difficult broadleaf weeds like ground ivy, while allowing the other tankmix partner(s) to provide adequate long-term control of ground ivy, dandelion, and other weeds. Further research will be initiated in 2003 to help further define the potential of carfentrazone.

Table 1. Fall 2002 injury to and percent cover of ground ivy in Kentucky bluegrass turfgrass^a.

Treatment	Rate of application (fl oz/M) ^d	% ground ivy ^b						Ground ivy injury ^c		
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	21 DAT	1 DAT	3 DAT	7 DAT
F8426	0.05	97.3	93.0	86.7	65.0	53.3	48.3	4.0	5.3	6.0
F8426	0.038	97.3	95.7	92.7	87.7	80.0	81.7	4.3	4.7	5.0
F8426	0.025	96.3	94.7	93.0	89.3	85.0	83.3	3.3	4.3	4.0
F8426+	0.025	94.7	92.7	90.0	84.7	81.7	70.0	2.0	2.7	2.7
Trimec Classic	0.9									
Trimec Classic	1.5	95.3	95.0	93.3	94.0	85.7	86.7	0.0	0.3	2.0
F8426+	0.025	96.0	94.3	90.3	83.3	70.0	46.7	4.0	4.0	4.7
Eliminate	0.64									
Eliminate	1.1	97.3	97.3	97.3	96.3	92.3	93.7	0.0	0.0	1.0
F8426+	0.025	96.3	92.7	88.3	80.0	80.0	65.0	2.7	3.7	3.7
Chaser 2 Amine	0.9									
Chaser 2 Amine	1.1	96.3	96.0	94.7	93.7	88.7	84.7	0.0	0.0	0.7
F8426+	0.025	94.7	88.3	76.7	43.3	45.0	33.3	3.0	3.0	3.0
Turflon Ester	0.375									
Turflon Ester	0.75	92.7	92.7	91.7	92.3	89.7	92.3	0.0	0.3	2.0
Check	0	98.3	98.0	98.0	98.0	97.3	97.3	0.0	0.0	0.0
LSD (0.05)		NS	NS	9.1	16.8	17.6	22.9	0.5	0.9	1.6

^a No phytotoxicity was observed on the Kentucky bluegrass during the experiment.

^b Percent cover of ground ivy.

^c Ground ivy injury was observed as blighted leaves and rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^d Rate of application expressed as fluid ounces product per 1000 square feet.

Table 2. Fall 2002 injury to and percent cover of Canada thistle on fallow ground.

Treatment	Rate of application (fl oz/M) ^c	% Canada thistle ^a						Canada thistle injury ^b		
		0 DAT ^d	1 DAT	3 DAT	7 DAT	14 DAT	21 DAT	1 DAT	3 DAT	7 DAT
F8426	0.05	33.3	33.3	28.3	15.0	11.7	8.3	4.0	7.0	7.0
F8426	0.038	26.7	28.3	28.3	26.7	26.7	23.3	1.7	2.7	4.3
F8426	0.025	30.0	28.3	26.7	28.3	25.0	23.3	2.0	3.0	3.3
F8426+	0.025	31.7	33.3	31.7	23.3	13.3	10.0	1.7	5.0	7.3
Trimec Classic	0.9									
Trimec Classic	1.5	30.0	30.0	30.0	21.7	16.0	10.0	1.7	2.7	7.7
F8426+	0.025	28.3	28.3	25.0	21.7	16.7	9.7	1.7	3.7	6.0
Eliminate	0.64									
Eliminate	1.1	33.3	33.3	33.3	23.3	18.3	9.0	0.0	3.0	7.7
F8426+	0.025	35.0	35.0	33.3	21.7	15.0	10.0	3.0	5.3	7.0
Chaser 2 Amine	0.9									
Chaser 2 Amine	1.1	30.0	28.3	26.7	23.3	25.0	18.3	0.3	1.0	6.0
F8426+	0.025	31.7	31.7	31.7	30.0	30.0	26.7	2.0	3.3	3.3
Turflon Ester	0.375									
Turflon Ester	0.75	30.0	26.7	26.7	18.3	11.7	5.7	0.7	2.0	8.0
Check	0	35.0	31.7	31.7	36.7	33.3	33.3	0.0	0.0	0.0
LSD (0.05)		4.0	5.1	NS	5.6	7.6	5.1	0.8	1.4	1.5

^a Percent cover of Canada thistle.

^b Canada thistle injury was observed as flacid leaves that had twisted 180 degrees exposing the underside of the leaf and rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^c Rate of application expressed as fluid ounces product per 1000 square feet.

Table 3. Spring 2003 percent cover of ground ivy, Canada thistle, dandelion and clover.

Treatment	Rate of application (fl oz/M)	April 2003			
		Ground Ivy	Canada Thistle	Dandelion	Clover
F8426	0.05	18.3	8.3	25.0	8.3
F8426	0.038	25.0	6.7	26.7	7.7
F8426	0.025	25.0	9.0	25.0	9.0
F8426 + Trimec Classic	0.025 0.9	13.3	12.3	8.3	2.0
Trimec Classic	1.5	8.0	8.0	5.0	0.3
F8426 + Eliminate	0.025 0.64	9.0	5.3	7.7	2.7
Eliminate	1.1	4.7	9.3	6.0	2.3
F8426 + Chaser 2 Amine	0.025 0.9	1.0	12.7	7.0	7.7
Chaser 2 Amine	1.1	0.3	5.7	6.7	2.3
F8426+ Turflon Ester	0.025 0.375	1.7	6.0	12.0	0.0
Turflon Ester	0.75	0.7	4.7	3.7	0.0
Check	0	33.3	6.7	26.7	11.7
LSD (0.05)		16.5	NS	9.5	NS